

REMARKS

Claims 1-40 are pending. Claims 1, 4, 27, 29, 32 and 35 are amended herein. The amendments add no new matter.

Objection to the Drawings

The Office Action stated that new drawings in compliance with 37 C.F.R. 1.121(d) are required because the application has informal drawing sheets. Formal replacement drawings in accord with 37 C.F.R. 1.121(d) are provided herein to satisfy this requirement.

Rejection under 35 U.S.C. §112, Second Paragraph

Claim 4 is rejected under 35 U.S.C. §112, second paragraph as indefinite for lack of antecedent basis for the term “the at least one block.” Claim 4 is amended herein to change the dependency to claim 3, which provides the necessary antecedent basis for the term. Reconsideration and withdrawal of the rejection is respectfully requested.

Rejections under 35 U.S.C. §102

Haff et al.

Claims 1-13 and 15-38 are rejected under 35 U.S.C. §102(b) as lacking novelty over Haff et al. (U.S. 5,720,923). The Office Action states:

Haff et al. teach a polymerase chain reaction (PCR) apparatus of claims 1, 27, 32, 35 comprising (i) a solution holder (capillary tubes) separately hold a plurality of samples of reaction mixture (see col. 3, line 1-6, col. line (sic) 19-64; (ii) a heat exchanging structure to cycloically control specified duration and temperature of plurality of samples (see col. 3, line 6-15, col. 4, line 19-51); and an aliquot dispensing mechanism to dispense samples (see col. 4, line 24-25, line 56-60, col. 16, line 56-58, col. 19, line 56-67, col. 20, line 1-7).

The Office Action thus concludes that the Haff et al. reference anticipates the claimed invention. Applicants respectfully disagree.

The Haff et al. reference does not teach an aliquot dispensing mechanism to

dispense, from each sample of a set of the plural samples held by the solution holder, plural aliquots of a given sample to respective separate aliquot holders as required by each of independent claims 1, 27, 29, 32 and 35. Specifically, while Haff et al. may teach a mechanism for drawing a reaction mixture into a capillary tube for thermal cycling, the reference does not teach a mechanism for dispensing plural aliquots from a given sample to respective separate aliquot holders. The reference also does not teach a mechanism for dispensing aliquots “at respective different cycles of an amplification regimen” as also required by the claims as amended. The amendment language is supported, for example, in the claims as filed (see, e.g., claim 28). A mechanism that loads sample into a capillary for thermal cycling is not a mechanism for dispensing aliquots, plural, from that capillary at respective different cycles during an amplification regimen. Therefore, the Haff et al. reference does not anticipate any of claims 1, 27, 29, 32 or 35 as amended. Reconsideration and withdrawal of the rejections over the Haff et al. reference is respectfully requested.

Cahill et al.

Claims 1-4, 6-9, 11-14, 16, 19, and 21-40 are rejected under 35 U.S.C. §102(b) as lacking novelty over Cahill et al., WO 00/66995. The Office Action states:

Cahill et al. teach a polymerase chain reaction (PCR) apparatus of claim 1, comprising (i) a solution holder separately hold (sic) plurality of samples of reaction mixture (see page 11, line 4-30, page 12, line 1-19, page 17, line 1-8); (ii) a heat exchanging structure to cyclically control specified duration and temperature of plurality of samples (see page 11, line 14-21, page 12, line 1-19); and an aliquot dispensing mechanism to dispense samples (see page 11, line 22-30, page 12, line 9-19, page 15, line 16-24, page 17, 14-20).

The Office Action thus concludes that these subject claims are anticipated by the Cahill et al. reference. Applicants respectfully disagree.

The Cahill et al. reference does not teach an aliquot dispensing mechanism to dispense, from each sample of a set of the plural samples held by the solution holder, plural aliquots of a given sample to respective separate aliquot holders, as required by each of independent claims 1, 27, 29, 32 and 35. Specifically, while Cahill et al. may

teach the performance of PCR in capillary tubes, the entire reaction sample volume, and not plural aliquots of a given sample volume, is shuttled from the site of amplification to another capillary tube for dialysis. That is, the reference describes neither repeated sampling from a reaction volume nor a mechanism for doing so. Thus, the reference does not teach a mechanism for dispensing plural aliquots from a given sample to respective separate aliquot holders. The reference also does not teach a mechanism for dispensing aliquots “at respective different cycles of an amplification regimen” as also required by the claims as amended. A mechanism that transfers an entire sample volume from one capillary to another after a PCR reaction has been completed as described by Cahill et al. does not leave sample behind for further cycling *and* does not provide a mechanism for dispensing plural aliquots *during* a PCR cycling regimen as required by the claims as amended. Therefore, the Cahill et al. reference does not anticipate any of claims 1, 27, 29, 32 or 35 as amended. Reconsideration and withdrawal of the rejections over the Cahill et al. reference is respectfully requested.

Tal et al.

Claims 1-4, 13 and 21-24 are rejected under 35 U.S.C. §102(a) as lacking novelty over Tal et al., U.S. 6,482,615. The Office Action states:

Tal et al. teach a polymerase chain reaction (PCR) apparatus of claim 1 comprising (i) a solution holder separately hold (sic) plurality of samples of reaction mixture (see col. 2, line 51-67, col. 4, line 54067); (ii) a heat exchanging structure to cyclically control specified duration and temperature of plurality of samples (see col. 2, line 51-67, col. 4, line 48-56); and an aliquot dispensing mechanism to dispense samples (see col. 5, line 34-46).

The Office Action thus concludes that these subject claims are anticipated by the Tal et al. reference. Applicants respectfully disagree.

The Tal et al. reference does not teach an aliquot dispensing mechanism to dispense, from each sample of a set of the plural samples held by the solution holder, plural aliquots of a given sample to respective separate aliquot holders, as required by independent claim 1 and claims 2-4, 13 and 21-24 that depend from it. The Tal et al. reference describes an apparatus that achieves thermal cycling by high velocity air flow

past a sample container. The reference does not teach any mechanism for dispensing an aliquot of the sample, particularly not a mechanism for dispensing plural aliquots of a given sample at plural stages during an amplification regimen. The passage cited in the Office Action as teaching an aliquot dispensing mechanism, namely column 5, lines 34-36 do not teach such an aliquot dispensing mechanism at all. The cited passage is quoted below:

The manner in which the illustrated apparatus effects rapid thermal cycling of the samples contained within the sample holder 20 will be apparent from the above description. Thus, when samples are to be thermally cycled, the samples are introduced into the tubes 21 of the sample holder 20, and the sample holder is introduced into the closed loop flow path 11 defined by housing sections 3 and 7, via the access opening in housing leg 8. The sample holder is pressed against the mat 22 by the sample-holder compartment cover. Solenoid 15 is actuated to rotate the inlet plate 13 to close the inlet openings 13a; and similarly solenoid 16 is actuated to close the outlet 14. Thus, the air flow path 11 produced within the two sections 3 and 7 of housing 2 is a closed loop flow path.

This passage nowhere teaches a mechanism for dispensing plural aliquots of a given sample, and particularly not at plural stages during an amplification regimen, as recited in claim 1 as amended. The reference describes neither repeated sampling from a reaction volume nor a mechanism for doing so. Therefore, the Tal et al. reference does not anticipate claim 1 as amended or claims 2-4, 13 and 21-24 that depend from it. Reconsideration and withdrawal of the rejections over the Tal et al. reference is respectfully requested.

In view of the above, all issues raised in the Office Action have been addressed herein. Reconsideration of the claims is respectfully requested.

Respectfully submitted,

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